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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/000,127	12/04/2001	Yasuyuki Tanaka	011304	8469

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EXAMINER

HERTZOG, ARDITH E

ART UNIT PAPER NUMBER

1754

DATE MAILED: 07/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/000,127	TANAKA ET AL.	
	Examiner	Art Unit	
	Ardith E. Hertzog	1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on June 10, 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) 9 and 10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claim(s) 1-10 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Dec 4, 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input checked="" type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>Feb 21, 2003</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Election

1. This action is in response to applicant's response to restriction requirement filed June 10, 2004. Applicant's election **without** traverse of the subject matter of Group (I), claims 1-8, is acknowledged. Accordingly, claims 9 and 10 are withdrawn from further consideration, pursuant to 37 CFR § 1.142(b), as being drawn to a nonelected invention.

Priority

2. Receipt is acknowledged of papers submitted under 35 U.S.C. § 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

3. Receipt is hereby acknowledged of the information disclosure statement, filed February 21, 2003. As the submission is in compliance with the provisions of 37 CFR § 1.97, the information disclosure statement has been considered, in accordance with the enclosed PTO-1449.

Abstract

4. Applicant is reminded of the proper language and format for an abstract of the disclosure:

The language should be clear and concise and should not repeat information given in the title. **It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.** (MPEP § 608.01(b))

5. The abstract of the disclosure is objected to, because, per the bolded

citations above, the first sentence includes the phrase, "of the present invention".

It is suggested that the first sentence be revised in accordance with the preamble of claim 1, i.e., replacing "of the present invention in such" with "characterized in".

Appropriate correction is required.

Drawings

6. The drawings are objected to, in accordance with the enclosed PTO-948.

7. **Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended". If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR § 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. Any objection to the drawings will not be held in abeyance.**

Minor Informalities

8. The disclosure is objected to, because of the following minor informalities:
- a. At page 18, the first line of the first paragraph appears to be missing spaces between the words.
 - b. **Also** at page 21, the first line of the last paragraph appears to be missing spaces between the words.
 - c. **Also** at page 22, the first line of the last paragraph appears to be missing spaces between the words
 - d. "While there is no set statutory form for claims, the present Office practice is to insist that each claim must be the object of a sentence starting with 'I (or we) claim,' 'The invention claimed is' (or the equivalent)" (see MPEP § 608.01(m)).
 - e. In **each of** independent claims 1, 7 **and** 8, it is suggested that commas be inserted around "or a mixed vanadium compound of vanadium sulfate (III) and vanadyl sulfate (IV)", for clarity.
 - f. In claim 1, at line 4, it is suggested that "the" be inserted before "sulfate group", for clarity.
 - g. In claim 2, it is suggested that "of 10 to 30 weight% is contained in" be revised as "is contained in 10 to 30 weight% of" (or, alternatively, simply "comprises 10 to 30 weight% of"), for clarity.
 - h. In **both** claims 3 **and** 4, it is suggested that "a molar ratio" be revised as "the molar ratio" **and** "a range" be revised as "the range", for

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clarity (with antecedent basis for both “the molar ratio” and “the range” considered inherently present in the recited “mixed vanadium compound”).

i. In claim 5, it is suggested that “a form” be revised as “the form”, for clarity (with antecedent basis for “the form” inherently present in the recited “modified vanadium compound”).

j. In claim 6, it is suggested that “an average particle diameter” be revised as “the average particle diameter”, for clarity (with antecedent basis for “the... diameter” inherently present in the “particle” of claim 5 (upon which claim 6 depends)).

k. In **both** claims 7 **and** 8, it is suggested that “vanadium-contained solution” be revised as “vanadium-containing solution”, for clarity.

l. **Also** in claim 7, in the last line, it is suggested that “and” be inserted before “cooled”, for clarity.

m. **Also** in claim 8, it is suggested that “an obtained” be revised as “the obtained”, for clarity (with antecedent basis for “the obtained” inherently present in the earlier recited “dissolved in a... solution” step).

Appropriate correction of all the above is required.

Claim Rejections - 35 U.S.C. §§ 102 & 103

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. § 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

11. Claims 1, 3 and 4 are rejected under 35 U.S.C. § 102(a) as being anticipated by Tanaka et al. (US 6,613,298 B2, i.e., the US equivalent of JP 05-290871 cited by applicant). Initially, it is noted that the Tanaka et al. patent has not only a **different** inventive entity than the instant claims, but also a US filing date of July 2, 2001, which is **earlier** than that for the instant claims (i.e., December 4, 2001). Therefore, applicant cannot rely upon the foreign priority papers to overcome this rejection, because a translation of said papers has not yet been made of record, per 37 CFR § 1.55. See MPEP § 201.15. Tanaka et al. teach trivalent and tetravalent mixed vanadium compound producing methods, and vanadium electrolyte producing methods using same, wherein the mixed vanadium compound is made by methods **identical** to those disclosed in applicant's section entitled "Method of producing vanadium sulfate (III) or a mixed vanadium compound of vanadium sulfate (III) and vanadyl sulfate (IV)" (compare

Tanaka et al. col. 3, line 44 – col. 5, line 23, with instant pages 13-18). Thus, Tanaka et al. teach the **identical** molar ratio range recited in instant claim 3 (see especially col. 4, lines 31-34), which **encompasses** that recited in instant claim 4; **also** note that the molar ratio recited in Tanaka et al. claim 5 falls directly in the middle of the corresponding range recited in instant claim 4. **Furthermore**, in the Tanaka et al. vanadium electrolyte producing methods, such mixed vanadium compound is dissolved in sulfate solution, wherein the “sulfate ion density is normally 4 to 8 mol/L, preferably 4 to 5 mol/L” (see col. 5, lines 34-42), i.e., the **same** sulfate ion density used in applicant’s “modified vanadium compound producing method[s]” (see instant p. 18, the last sentence), “at a temperature of normally 60° C. to a boiling point, preferably 80 to 100° C., by agitating... for normally not less than 0.5 hour, preferably 1.5 to 3 hours” (see col. 5, lines 42-48), i.e., the **same** agitating temperatures and time periods used in applicant’s “modified vanadium compound producing method[s]” (see instant p. 19, the first paragraph). Thus, applicant’s “modified vanadium compound[s]”, as broadly recited in instant claims 1, 3 and 4, must **inherently** be present in these Tanaka et al. vanadium electrolyte solutions, since, as just discussed, the **same** starting reactants and the **same** reaction parameters used by applicant to produce such “modified vanadium compound[s]” in solution are **clearly** disclosed by Tanaka et al. (note that such compounds in solution clearly contain “excessive sulfuric acid”, per instant claim 1, given applicant’s broad definition of this phrase at instant p. 9, i.e., “excessive sulfuric acid means H₂SO₄”). **Accordingly**, Tanaka et al. anticipate applicant’s “modified vanadium compound” claims 1, 3 and 4,

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because, as just discussed, compounds which must **inherently** meet all material limitations of these claims are **clearly** disclosed.

12. Claims 1, 3 and 4 are **also** rejected under 35 U.S.C. § 102(e)(1) as being anticipated by Tanaka et al. **for the same reasons set forth in paragraph 11. above.** The Tanaka et al. patent has five common inventors with the instant application. Based upon the earlier effective U.S. filing date of the reference (again, July 2, 2001 vs. December 4, 2001), it constitutes prior art under 35 U.S.C. § 102(e). This rejection under 35 U.S.C. § 102(e) might be overcome either by a showing under 37 CFR § 1.132 that any invention disclosed but not claimed in the reference was derived from the inventors of this application, and is thus not the invention "by another," or by an appropriate showing under 37 CFR § 1.131. Here as well, applicant cannot rely upon the foreign priority papers to overcome this rejection, because a translation of said papers has not yet been made of record, per 37 CFR § 1.55. See again MPEP § 201.15.

13. Claims 1, 3 and 4 are rejected under 35 U.S.C. § 102(b) as being anticipated by Sato et al. (US 5,368,762). Sato et al. teach methods for producing vanadium electrolytic solutions, specifically trivalent and tetravalent vanadium solutions (see abstract). In Sato et al. Example 1, solid "crystals of trivalent vanadium $V_2(SO_4)_3$, **exhibiting a yellow color**" are produced (see col. 6, lines 63-65, emphasis added).

Next, 19.5 g of the thus-obtained $V_2(SO_4)_3$ crystals, 20 ml of a concentrated sulfuric acid solution and 80 ml of water were placed in a reaction chamber having a reflux tube and allowed to react at about 110° C. for 6 hours, thus producing a trivalent vanadium

solution **exhibiting a dark green color.** (col. 7, lines 1-6, emphasis added).

Similarly, applicant teaches:

Further, **since color of the vanadium compound is changed according to modification of the present invention, existence and non-existence of modification can be checked according to a change in color.** For example, **unmodified vanadium sulfate (III) shows lemon-yellow color, and modified vanadium sulfate (III) shows green color.** (bottom of instant p. 11)

Therefore, it is respectfully submitted that applicant's "modified vanadium compound[s]", as broadly recited in instant claims 1, 3 and 4, must **inherently** be present in this Sato et al. vanadium electrolytic solution, since the **same** starting reactants used by applicant (again, vanadium sulfate (III) and "sulfate solution" (i.e., sulfuric acid in water)) and, as just discussed, the **same** reaction color change taught by applicant are **clearly** disclosed by Sato et al. (note that such compounds in solution clearly contain "excessive sulfuric acid", per instant claim 1, given applicant's broad definition of this phrase at instant p. 9, i.e., "excessive sulfuric acid means H_2SO_4 "). **Accordingly**, Sato et al. anticipate applicant's "modified vanadium compound" claims 1, 3 and 4, because, as just discussed, compounds which must **inherently** meet all material limitations of these claims are considered to be **clearly** disclosed. Note that instant dependent claims 3 and 4 have been included in this rejection, since they merely recite further limitations on applicant's "mixed vanadium compound", if present; that is, neither instant claim 3 nor instant claim 4 **requires** that the "modified vanadium compound" comprise applicant's "mixed vanadium compound". Finally, note that the remaining Sato et al. working examples **also** disclose various trivalent

vanadium solutions which exhibit **a dark green color**.

14. Claim 2 is rejected under 35 U.S.C. § 102(b) as anticipated by or, in the alternative, under 35 U.S.C. § 103(a) as obvious over Sato et al. Sato et al. are relied upon as just set forth, with Example 1 anticipating applicant's "modified vanadium compound" claim 1 (upon which instant claim 2 depends). Sato et al. fail to **explicitly** disclose the weight percentage of sulfuric acid present within the "modified vanadium compound" inherently present in the trivalent vanadium solution of Sato et al. Example 1, per instant claim 2. **However**, given that the **same** color change taught by applicant is **clearly** disclosed by Sato et al., this Sato et al. working example may **also** be considered to **inherently** meet the requirements of instant claim 2. Again, as applicant teaches that a color change from yellow to green is indicative of "modification", per the instant claims (see again bottom of instant p. 11), it is respectfully submitted that the "modified vanadium compound" inherently present in Sato et al. Example 1 must **also** meet the specific "excessive sulfuric acid" percentage requirements of instant claim 2, given its dark green color. **Alternatively**, it could be argued that this patent is not **fully** anticipatory of instant claim 2, since no **specific** weight percentage of sulfuric acid present within the "modified vanadium compound" of Sato et al. Example 1 is **explicitly** disclosed. **However**, if not anticipated, then, at the least, it would have been obvious to one of ordinary skill in the art, at the time of applicant's invention, to have determined with minimum testing suitable such amounts of sulfuric acid, because sulfuric acid is **clearly** taught by Sato et al. as a **required** component of the disclosed vanadium electrolytic solutions, and

optimization of relative proportions for **any** components taught by Sato et al. as **required** is, absent evidence otherwise, considered to have been within the level of ordinary skill. When having done so, it is respectfully submitted that, absent evidence otherwise, sulfuric acid amounts falling within the scope of instant claim 2 would have obviously resulted.

15. Claims 5-8 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Sato et al. Sato et al. are relied upon as set forth in paragraph 13. above, with Example 1 anticipating applicant's "modified vanadium compound" claim 1 (upon which instant claims 5 and 6 depend). Sato et al. fail to disclose a particle form for the "modified vanadium compound" inherently present in the trivalent vanadium solution of Sato et al. Example 1, per instant claims 5 and 6, **as well as** the "condensed" and "cooled to be solidified" steps of instant "producing method" claims 7 and 8. **However**, Sato et al. **do** disclose that

because the reaction products are the same as components of the electrolytic solution system, there is no need for separation and purification processes, such as extraction, distillation, absorption, etc. The tri- and tetravalent vanadium compounds can be separated not only by the abovementioned process but also by utilizing the difference in their reaction temperatures, that is, synthesizing a tetravalent vanadium solution in a low temperature range and a trivalent vanadium solution in a high temperature range.

The method of the present invention can be used to recycle electrolytic solutions. Thus, vanadium can be reused practically an unlimited number of times. (col. 5, lines 66 – col. 6, line 10)

Thus, although not exemplified by Sato et al., it would have been obvious to one of ordinary skill, at the time of applicant's invention, that **any** of the vanadium compounds taught by Sato et al. could be separated as/if desired, since, as

shown by the above citation, such separation—while not preferred by Sato et al., since the patent is drawn to vanadium electrolytic **solutions**—is still within the broad disclosure of Sato et al. “A reference may be relied upon for all that it would have reasonably suggested to one having ordinary skill in the art, including nonpreferred embodiments. *Merck & Co. v. Biocraft Laboratories*, 874 F.2d 804, 10 USPQ2d 1843 (Fed. Cir.), cert. denied, 493 U.S. 975 (1989)” (see MPEP § 2123). **Furthermore**, when having separated the Sato et al. vanadium compounds, it would have been obvious to one of ordinary skill in the art, at the time of applicant’s invention, to have determined with minimum testing correspondingly suitable final product forms, such as particles (and hence appropriate average particle size), because optimization of **any** such standard reaction product parameter, like final product form, is considered to have been within the level of ordinary skill. When having done so, it is respectfully submitted that, absent evidence otherwise, particles falling within the scope of instant claims 5 and 6 would have obviously resulted. **Analogously**, when having separated the Sato et al. vanadium compounds, it would have been obvious to one of ordinary skill in the art, at the time of applicant’s invention, to have determined with minimum testing correspondingly suitable separation means, such as condensation/evaporation and cooling solidification, because optimization of **any** such standard separation process parameter is considered to have been within the level of ordinary skill. When having done so, it is respectfully submitted that, absent evidence otherwise, methods falling within the scope of instant claims 7 and 8 would have obviously resulted.

Comparative Data

16. The comparative data presented in applicant's specification—namely, the data summarized in Table 3 at instant page 27—have been very carefully reviewed. However, they cannot be considered sufficient to overcome the above *prima facie* case of obviousness with respect to claims 5-8 (and/or claim 2) (noting again that claims 1, 3 and 4 (and/or claim 2) are currently considered **anticipated** by Tanaka et al. and/or Sato et al.), in that they do not appear to be within the scope of these claims; “objective evidence of nonobviousness must be commensurate in scope with the claims which the evidence is offered to support” (see MPEP § 716.02(d)). In particular, Embodiments 1-4 (inventive samples B and D-F, respectively) are drawn to **very specific** “modified” vanadium compounds (i.e., in **hydrate** form; containing **specific** amounts of “excessive SO₄” (per Table 2 at instant p. 26); and/or having a **specific** (V⁴⁺/V³⁺) molar ratio), whereas none of claims 5-8 (and/or claim 2) is so limited.

Conclusion

17. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. These references are considered cumulative to or less material than those discussed above. Kaneko et al. (US 5,250,158) is the US equivalent of JP 04-149965 cited by applicant. Nakajima et al. (US 5,587,132) is the US equivalent of JP 08-148177 cited by applicant. As with Tanaka et al., **absent a certified translation of applicant's foreign priority papers**, both Monaghan et al. (US 2003/0017102 A1) and Shiroto et al. (US 6,652,819 B2) are considered prior art with respect to the instant claims.

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18. Any inquiry concerning this communication should be directed to Ardith E. Hertzog at telephone number (571) 272-1347. The examiner can normally be reached on Monday through Friday (from about 8:30 a.m. - 4:30 p.m.).

19. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley S. Silverman, can be reached at (571) 272-1358.

20. The fax phone number for the organization where this application is assigned is 703-872-9306.

21. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. For any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


AEH
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